marginal spot which is bordered by reddish coppery. Elytra golden green, with a broad yellow vitta on each, with a narrow dark cyaneous line between the yellow and the suture. Abdomen coppery, clothed with ashy pubescence at the sides. ♀.

Long. 26 mm.

Hab. Nyassa (*Thelwall*).

Closely resembles *C. lepida*, Gory, but differs in being of a lighter golden green. The thorax is more finely punctured at the sides.

[To be continued.]

XXXVIII.—*Description of and Reflections upon a new Species of Apodous Amphibian from India.* By A. Alcock, M.B., LL.D., F.R.S., Superintendent of the Indian Museum and Professor of Zoology in the Medical College of Bengal.

[Plate VII.]

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§ 1. The Question of the *Cæciliidæ*.

The Apodous Amphibia (Cæciliidæ) are of interest, not only to the morphologist, but also on account of their geographical distribution, for since these animals are specially modified for a subterranean life, it is difficult to understand how any of the ordinarily invoked modes of dispersal can have operated upon them.

Up to the year 1895, according to Boulenger (P. Z. S. 1895, pp. 401–414), 42 species of Cæcilians were known—namely, from tropical America 26, from tropical West Africa (north of the Equator) 4, from East Africa 4, from Seychelles 3, from India and South-east Asia 5.

Since the publication of Mr. Boulenger's paper 2 more species have been described from tropical America and 1 each from West and East Africa; and I have now to place on

record another new species, from Cachar, bringing up the number of Indian species to 6.

The Indian Cæcilians hitherto known belong to three genera, of which one, *Ichthyophis*, is found only in the Oriental region; another, *Gegenophis*, is peculiar to the southern end of the Indian peninsula; while the third, *Uræotyphlus*, is represented in Southern India (Malabar) and in West Africa just north of the Equator (Gaboon).

The new Indian species, which comes from the district of Cachar in the province of Assam, belongs to a genus, *Herpele*, of which three other species are known, namely, *H. ochrocephala*, Cope, from Panama, and *H. squalostoma* (Stuchbury) and *H. Bornmuelleri*, Werner, from West Africa (Gaboon and Senegambia).

The range of this genus *Herpele*, which touches practically all the salient strongholds of the order to which it belongs, seems striking enough to require some special explanation, for it can hardly be supposed that the immediate ancestors of a form that is modified for underground life and guards its eggs in its burrows could, even though its larvæ live for a time in fresh water, be transported through 170° of meridian and across great oceans solely by those distributing agencies that are recognized by zoologists who maintain that continents and oceans are permanent.

§ 2. The Distribution of the *Cæciliidæ* compared with that of certain *Sublittoral* Genera of Hermit-crabs.

It has occurred to me that some light is thrown upon the case of *Herpele* and upon the distribution of the Cæciliidæ in general by the geographical affinities of certain elements of the sublittoral fauna of the seas of India.

I am of course aware that ordinary marine animals, both as adults and even more in their larval stages, are supposed to live under simpler conditions and to be less restrained by physical barriers than land animals. Without arguing that question, I may, perhaps, minimize the force of this objection by selecting the *sublittoral* hermit-crabs (Paguridæ), very few of which have even the most moderate swimming-powers, and a good many of which—as we may conclude from the comparative large size and fewness of their eggs—do not periodically squander a multitude of unspecialized larvæ abroad.

I have lately completed a sort of monograph of the Paguridæ, and I find that the species inhabiting the sub-

littoral slopes of Indian seas appear to be part of a sublittoral fauna which, though showing a certain circumtropical tendency, is concentrated at certain definite points in the Northern Hemisphere and is correspondingly deficient at certain definite points in the Southern Hemisphere. The striking points of concentration are (1) the West Indian region, including to a less noticeable extent the Bay of Panama, (2) that part of the North Atlantic that lies between the Azores and Cape Verde and that washes the corresponding shores of South-western Europe and North-western Africa, and (3) Oriental seas from India to the Philippines (and Japan); and the striking deficiencies are (1) the coasts bounding the South Atlantic, and (2) the south-western corner of the Indian Ocean.

Table I.—*Showing the Geographical Affinities of the Sublittoral Hermit-crabs of India.*

Name of Genus.	Tropical American region (Atlantic).	North Atlantic coasts of Europe & N.W. Africa.	South Atlantic coasts of America south of Pernambuco.	South Atlantic coasts of Africa.	East coast of Africa.	Oriental Seas.	Remarks.
1. *Pylocheles*	*	..	..	..	..	*	Not elsewhere.
2. *Chiroplatæa*	*	..	..	..	..	*	Not elsewhere.
3. *Catapagurus*	*	..	..	..	..	*	Also N.W. Atlantic and Pacific.
4. *Tomopaguropsis* ..	*	..	..	..	..	*	Not elsewhere.
5. *Glaucothoë*	..	*	..	..	..	*	Also Pacific.
6. *Nematopagurus* ..	..	*	..	..	..	*	Also Mediterranean.
7. *Paguristes*	*	*	..	1 sp. (Cape)	1 sp. (G.Aden)	*	Also Mediterranean and Pacific.
8. *Sympagurus*	*	*	..	..	..	*	Also N.W. Atlantic and Pacific.
9. *Spiropagurus*	*	*	..	..	..	*	Also Pacific.
10. *Anapagurus*	*	*	..	1 sp. (Cape)	..	*	Also Mediterranean.
11. *Cancellus*	*	*	..	..	..	*	Also Pacific.
12. *Parapylocheles* ..	..	..	..	..	..	*	Not elsewhere.
13. *Paguropsis*	..	..	..	..	..	*	Not elsewhere.
14. *Pagurodes*	..	..	..	..	..	*	Also W. Pacific.
15. *Pylopaguropsis* ..	..	..	..	..	..	*	Not elsewhere.
Total genera	9	7	..	2 (2 sp.)	1 (1 sp.)	15	

The state of affairs is exhibited in the preceding table, from which I have eliminated *Parapagurus*, as it is rather abyssal than sublittoral, and *Eupagurus*, as it is cosmopolitan and as much littoral as sublittoral. And I must emphasize the fact that the reference is to sublittoral genera only, *i. e.* to groups the majority of species of which live on the submarine "shoot" or continental slope. [The land and littoral hermit-crabs of India are, by the evidence both of genera and species, parcel of a tropical marine province that extends from the coast of East Africa to the eastern confines of Polynesia.]

§ 3. The Distribution of the *Cæciliidæ* explicable on the Theory of a Tethyan Sea.

Now the point to which I would here draw attention is that the regions where these sublittoral hermit-crabs are concentrated show some remarkable coincidences with those where *Herpele* and the Cæciliidæ in general are found; and it seems to me that we have here (quite apart from any other sources of evidence) some conceivable outlines of a sea or chain of archipelagoes that may at some former time have extended, under uniform conditions, north of the Equator, from Panama eastwards, by way of Africa, into South-east Asia. Of this sea the hermit-crabs in question might be supposed to be part of the residual littoral or sublittoral fauna, while *Herpele* might be one of the relics of the land-fauna of its southern coasts.

As to the time when this great sea may be supposed to have existed, all that can here be said is that the Cæcilians are quite unknown in a fossil state and that the earliest indisputable remains of Paguridæ are referred by palæontologists to the Eocene.

It is, perhaps, hardly necessary to remark that the southern limits of this supposed sea correspond fairly well, both in space and time, with Professor Suess's Tethys.

Nor, perhaps, is it necessary to state that numerous other writers, both geologists and zoographers, have discussed the question of former land-connexions between India and Africa on the one hand and between Africa and South America on the other, and that the connexion between India and South Africa is regarded by many competent geologists as sufficiently established by evidence. This connexion, which is well known by the name "Lemuria," is believed to have included Madagascar, and may have extended into the Tertiary period; it explains the presence of Cæcilians in the Seychelles and the absence of the hermit-crabs in question from the east coast of Africa.

As regards the connexion between tropical Africa and tropical America, across the mid-Atlantic, the geological evidence is of itself too fragmentary to be convincing, though zoological testimony in its favour is steadily accumulating. Further investigation is needed, and the lines on which it may be conducted have been fully discussed by Dr. A. E. Ortmann in a most interesting paper upon "The Geographical Distribution of Freshwater Decapods and its bearing upon Ancient Geography," published in the 'Proceedings of the American Philosophical Society,' vol. lxi. no. 171, for 1902. In that paper also copious references to zoo-geographical literature are to be found.

§ 4. Description of *Herpele Fulleri*, sp. n., from Cachar in the Province of Assam.

Herpele, Peters.

Herpele, Peters, MB. k. Akad. Berlin, (1879) 1880, p. 939; Boulenger, Cat. Batr. Brit. Mus. 2nd edit., 1882, p. 100, and P. Z. S. 1895, p. 409.

"Squamosals in contact with parietals; eyes over-roofed by bone. Two series of teeth in the lower jaw. Tentacle globular, surrounded by a ring-like groove, situated below and posteriorly to the nostril. Cycloid scales imbedded in the skin."

Herpele Fulleri, sp. n. (Pl. VII.)

The snake-like or worm-like body gradually increases in girth from the base of the shark-like snout to a point near the stump-like hinder end.

The head is about $\frac{1}{27}$ of the total length. The snout is long and sharp and far overhangs the mouth. The nostril is lateral, and a short way below and behind it (in a vertical line with the symphysis of the lower jaw), and on a slight eminence, is a minute globular circumvallate tentacle.

The mouth-cleft is wide. The teeth of the upper jaw, vomer, and palatine are small, recurved, and stand in a single series; those of the lower jaw are in two series and are larger.

No traces of eyes are visible until the skin is removed, when the minute eyes are seen lying beneath the bones of the head.

Behind the head the integument forms 101 rings, of which those near the after end of the body are the narrowest.

The epidermis is finely, profusely, and sharply areolated, the areolæ corresponding with small dermal scales, which are very plain when the epidermis is removed.

Colours: snout and lips yellowish; head light brown; the rest of the body chocolate-brown, becoming almost black dorsally in its posterior part; the extreme edges of most of the rings also are blackish in most of their extent.

The total length of the unique specimen is 220 mm. The diameter behind the snout is 3 mm. and near the after end of the body 9 mm.

Named after the Hon. Mr. J. B. Fuller, C.S.I., C.I.E., Chief Commissioner of Assam.

Discovered in a miscellaneous collection of snakes from Kuttal, 6 miles south-west of Silchar in Cachar; purchased from Mr. C. B. Antram.

§ 5. Table of the *Cæciliidæ*.

In conclusion, and for comparison, I append a table showing the distribution of the Cæciliidæ; it is taken from Boulenger's paper in the P. Z. S. for 1895, with the recent discoveries added.

Table II.—*Showing the Distribution of the* Cæciliidæ.

Name of Genus.	Tropical America.	West Africa.	East Africa.	Seychelles.	India.	
Ichthyophis	..	..	..	..	2	Also S.E. Asia.
Dermophis	4	1	1			
Hypogeophis	..	..	1	2		
Cæcilia	6					
Amphiumophis ..	1					
Rhinatrema	3					
Geotrypetes	..	1				
Uræotyphlus	..	1	..	..	2	
Cryptopsophis ..	..	..	..	1		
Herpele	1	2	..	..	1	
Gymnopis	4					
Typhlonectes	3					
Chthonerpeton ..	2					
Siphonops	4					
Bdellophis	..	..	1			
Gegenophis	..	..	..	..	1	
Scolecomorphus ..	..	..	1			
Boulengerula	..	..	1			
Total species ..	28	5	5	3	6	

EXPLANATION OF PLATE VII.

Fig. 1. *Herpele Fulleri*, natural size.
Fig. 1 *a*. Head seen from above, enlarged.
Fig. 1 *b*. Head seen from the side, enlarged.
Fig. 1 *c*. Two rings of the body, enlarged.
Fig. 1 *d*. Posterior end of the body, ventral view, enlarged.

XXXIX.—*Description of a new Coleopterous Insect from Bounty Island.* By Capt. Thos. Broun, F.E.S. *With Note by* J. J. Walker, Esq., F.E.S.

[The Bounty Islands are a small group of granitic islets and rocks (about twenty in number) occupying a space of about 3 miles by 2, the highest summit being 290 feet above the sea. They are about 490 miles to the eastward of the south extreme of New Zealand, in the lat. 47° 44′ S., long. 179° E. All the islets are entirely destitute of fresh water or land vegetation of any sort, but are frequented by myriads of penguins and other sea-birds. Capt. F. W. Hutton, F.R.S., has described (Trans. N. Z. Inst. xxvii. p. 174, 1894) a large and conspicuous Stenopelmatid cricket, *Ischyroplectron isolatum*, from the Bounty Islands, and suggests that it may feed on the dead seaweed.—J. J. Walker.]

Group **Hydrophilidæ**.

Thomosis, gen. nov.

Body convex, oviform. *Antennæ* 9-articulate, their basal joint as long as the following five combined, gradually incrassate towards the extremity; second cylindric, barely half the length of the first; third longer than broad; fourth and fifth short; sixth also short, but distinctly broader than the preceding one; club three-jointed, oblong-oval, pubescent, the intermediate joint rather shorter than the others. *Labrum* porrect, medially incurved. *Epistome* broadly emarginate. *Eyes* flat, smooth. *Mentum* broad, flat, not transverse. *Femora* punctate, the intermediate distinctly pubescent; the posterior with minute almost indistinguishable pubescence, their punctuation closer and finer at the base than beyond it. *Tibiæ* stout; the anterior with two small denticles on the outside near the extremity and two or three higher up; they are armed at the apex with two stout unequal spurs; the other pairs are bicalcarate and bear coarse ciliæ. *Tarsi*